

What Is Claimed Is:

1. An anchoring element for use in spinal or bone surgery; said anchoring element comprising:

a shaft for anchoring in a vertebra or bone section;

a receiving part, which is connected to the shaft, is structured and arranged to connect to a rod having a pre-determined diameter (D) and an outer surface, the receiving part having a longitudinal axis and comprising a U-shaped recess forming a channel for the reception of the rod and two legs having free ends, the legs comprising a first thread, the legs further providing an exterior end surface of the receiving part; and

a securing element comprising a second thread that engages and cooperates with the first thread;

whereby a first distance between the exterior end surface of the receiving part and a closest portion of the outer surface of the rod in an axial direction is a pre-determined distance (A);

the first thread extends from the exterior end surface of the receiving part to a second distance that is smaller than or equal to the pre-determined distance (A); and

the receiving part further comprising an undercut adjacent to the first thread, the undercut having an edge farthest away from the first thread, the edge being located at a third distance (B) from the exterior end surface, the distance (B) being larger than the pre-determined distance (A).

2. The anchoring element according to Claim 1, wherein the undercut has a depth that corresponds at least to the depth of the thread.

3. The anchoring element according to Claim 1, wherein the first thread comprises a first internal thread and the securing element comprises a screw member having a first external thread that cooperates with the first internal thread.

4. The anchoring element according to Claim 1, wherein the first thread is a first external thread and the securing element comprises a screw nut having a first internal thread that cooperates with the first external thread.

5. The anchoring element according to Claim 1, wherein the receiving part comprises a first internal thread and the anchoring element comprises a first securing member comprising a screw member having a first external thread that cooperates with the first internal thread; and

wherein the receiving part further comprises a second external thread and the anchoring element further comprises a screw nut having a second internal thread that cooperates with the second external thread.

6. The anchoring element according to Claim 1, wherein the first and second threads each are a thread selected from a metric thread, a buttress thread, a flat thread or a thread with a negative load-bearing angle.

7. The anchoring element according to Claim 1, wherein the connection between the shaft and the receiving part is structured and arranged to be a monoaxial Connection.

8. The anchoring element according to Claim 1, wherein the shaft and the receiving part are an integral part.

9. The anchoring element according to Claim I, wherein the connection between the shaft and the receiving part is structured and arranged to be polyaxial.

10. An anchoring element for use in spinal or bone surgery; said anchoring element comprising:

a screw member comprising a spherical segment-shaped head and a shaft with a bone thread;

a receiving part comprising a longitudinal axis, a first bore in axially symmetrical alignment therewith and having a first diameter of sufficient size to permit the bone thread of the shaft to pass through but not to permit the head to pass through, and a second bore coaxial with the first bore and having a second diameter of sufficient size to permit the head to pass through, the receiving part further comprising a U-shaped recess forming a channel for the reception of a rod and two legs having free ends, the legs comprising a first thread, the legs further providing an

exterior end surface of the receiving part, the rod having a pre-determined diameter (D) and an outer surface;

a cylindrical pressure element having an outer diameter of a size capable of being inserted into the receiving part, having first side shaped to engage the head of the screw element and a second side opposite the first side shaped to receive a rod inserted into the V-shaped recess; and

a securing element comprising a second thread that engages and cooperates with the first thread;

whereby a first distance between the exterior end surface of the receiving part and a closest portion of the outer surface of the rod in an axial direction is a pre-determined distance (A);

the first thread extends from the exterior end surface of the receiving part to a second distance that is smaller than or equal to the pre-determined distance (A); and

the receiving part further comprising an undercut adjacent to the first thread, the undercut having an edge farthest away from the first thread, the edge being located at a third distance (B) from the exterior end surface, the distance (B) being larger than the pre-determined distance (A).

11. The anchoring element according to Claim 10, wherein the undercut has a depth that corresponds at least to the depth of the thread.

12. The anchoring element according to Claim 10, wherein the first thread comprises a first internal thread and the securing element comprises a screw member having a first external thread that cooperates with the first internal thread.

13. The anchoring element according to Claim 10, wherein the first thread is a first external thread and the securing element comprises a screw nut having a first internal thread that cooperates with the first external thread.

14. The anchoring element according to Claim 10, wherein the receiving part comprises a first internal thread and the anchoring element comprises a first securing member comprising a screw member having a first external thread that cooperates with the first internal thread; and

wherein the receiving part further comprises a second external thread and the anchoring element further comprises a screw nut having a second internal thread that cooperates with the

second external thread.

15. The anchoring element according to Claim 10, wherein the first and (second threads each are a thread selected from a metric thread, a buttress thread, a flat thread or a thread with a negative load-bearing angle.

16. A method for the manufacture of an anchoring element comprising a shaft for anchoring in a vertebra or bone section and a receiving part, the method comprising providing an undercut in the surface of the receiving element prior to cutting a thread on the surface from an end of the receiving element to the undercut.

17. A method for performing spinal or bone surgery, the method comprising:  
providing a bone anchoring element comprising:

a shaft for anchoring in a vertebra or bone section;

a receiving part, which is connected to the shaft, is structured and arranged to connect to a rod having a pre-determined diameter (D) and an outer surface, the receiving part having a longitudinal axis and comprising a U-shaped recess forming a channel for the reception of the rod and two legs having free ends, the legs comprising a first thread, the legs further providing an exterior end surface of the receiving part; and

a securing element comprising a second thread that engages and cooperates with the first thread;

whereby a first distance between the exterior end surface of the receiving part and a closest portion of the outer surface of the rod in an axial direction is a pre-determined distance (A);

the first thread extends from the exterior end surface of the receiving part to a second distance that is smaller than or equal to the pre-determined distance (A); and

the receiving part further comprising an undercut adjacent to the first thread, the undercut having an edge farthest away from the first thread, the edge being located at a third distance (B) from the exterior

end surface, the distance (B) being larger than the pre-determined distance (A);

screwing the shaft into a vertebra or bone section;

positioning a rod into the U-shaped recess; and

fixing the rod in the bone anchoring element with the securing element.

18. The method according to claim 17, further comprising screwing a shaft of a plurality of bone anchoring elements into various sites of a vertebra or bone section, positioning the rod into the plurality of anchoring elements, and fixing the rod in the plurality of bone anchoring elements.

19. A method for performing spinal, or bone surgery, the method comprising:  
providing a bone anchoring element comprising:

a screw member comprising a spherical segment-shaped head and a shaft with a bone thread;

a receiving part comprising a longitudinal axis, a first bore in axially symmetrical alignment therewith and having a first diameter of sufficient size to permit the bone thread of the shaft to pass through but not to permit the head to pass through, and a second bore coaxial with the first bore and having a second diameter of sufficient size to permit the head to pass through, the receiving part further comprising a U-shaped recess forming a channel for the reception of a rod and two legs having free ends, the legs comprising a first thread, the legs further providing an exterior end surface of the receiving part, the rod having a pre-determined diameter (D) and an outer surface;

a cylindrical pressure element having an outer diameter of a size capable of being inserted into the receiving part, having a first side shaped to engage the head of the screw element and a second side opposite the first side shaped to receive a rod inserted into the U-shaped recess; and

a securing element comprising a second thread that engages and cooperates with the first thread;

whereby a first distance between the exterior end surface of the receiving part and a closest portion of the outer surface of the rod in an axial direction is a pre-determined distance (A);

the first thread extends from the exterior end surface of the receiving part to a second distance that is smaller than or equal to the pre-determined distance (A); and

the receiving part further comprising an undercut adjacent to the first thread, the undercut having an edge farthest away from the first thread, the edge being located at a third distance (B) from the exterior end surface, the distance (B) being larger than the pre-determined distance (A);

screwing the screw member of a pre-assembled receiving part, screw member and cylindrical pressure element into a vertebra or bone section;

positioning a rod into the U shaped recess;

adjusting the angular orientation of the receiving part relative to the screw member; and

fixing the rod in the bone anchoring element with the securing element.

20. The method according to chain 19, further comprising screwing a screw member of a plurality of bone anchoring elements into various sites of a vertebra or bone section, positioning the rod into the plurality of anchoring elements, adjusting the angular orientation of the receiving part relative to the screw member in each of the plurality of bone anchoring members and fixing the rod in the plurality of bone anchoring elements.

21. An anchoring element for use in spinal or bone surgery; said anchoring element comprising:

a shaft for anchoring in a vertebra or bone section;

a receiving part which is connected to the shaft, is structured in the range to connect to a rod having a pre-determined diameter (D) and an outer surface, the receiving part having a longitudinal axis and comprising a U-shaped recess forming a channel for the reception of the rod and two legs having free ends, the legs comprising a first thread, the legs further providing an exterior end surface of the receiving part;

and

a securing element comprising a second thread that engages and cooperates with the first thread;

whereby a first distance between the exterior end surface of the receiving part and a closest portion of the outer surface of the rod in an axial direction is a pre-determined distance (A);

the first thread extends from the vicinity of the exterior end surface of the receiving part to a second distance that is smaller than or equal to the pre-determined distance (A); and

the receiving part further comprising an undercut adjacent to the first thread, the undercut having an edge farthest away from the first thread, the edge being located at the third distance (B) from the exterior end surface, the distance (B) being larger than the pre-determined distance (A).